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(21) International Application Number: PCT/DK93/00089 (22) International Filing Date: 10 March 1993 (10.03.93) (30) Priority data: 0108/92 11 March 1992 (11.03.92) DK (71)(72) Applicant and Inventor: BRIX-HANSEN, Helge [DK/DK]; 6 Hjortsøgaardvej, DK-4771 Kalvehave (DK). (74) Agents: JESSEN, Ivar, Bergishagen et al.; International Patent-Bureau, Høje Taastrup Boulevard 23, DK-2630 Taastrup (DK).		(81) Designated States: AT, AU, BB, BG, BR, CA, CH, CZ, DE, DK, ES, FI, GB, HU, JP, KP, KR, KZ, LK, LU, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SK, UA, US, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, SN, TD, TG). Published <i>With international search report.</i>
(54) Title: TOOL FOR BREAKING A VACUUM IN A PRESERVING JAR CLOSED WITH A SCREW CAP <div data-bbox="578 1152 1141 1703" data-label="Image"> </div> (57) Abstract <p>The tool is provided with an oblong handle (1), which at one end has a portion (5) for engaging the cap (7) of a preserving jar (8), and a jaw (2) for engaging the lower edge of the cap. The mouth of the jaw is turned away from the other end of the handle, and between the free end (3) of the jaw and the portion (5) for engaging the cap (7) a concave, circular cylindrical guide slot (6) is provided, said guide slot (6) guiding the tool into position against the rim of the cap in such a way that the jaw grips the lower edge of the cap, after which a slight lifting of the handle brings about an elastic deformation of the rim of the cap allowing the vacuum in the preserving jar to be broken.</p>		

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TOOL FOR BREAKING A VACUUM IN A PRESERVING JAR CLOSED WITH A
SCREW CAP

5 The present invention relates to a tool for breaking
a vacuum in a preserving jar closed with a screw cap, said
tool comprising an oblong handle, which at one end has a
portion for engaging the periphery of the cap, and a jaw for
engaging the lower edge of the cap.

10 A tool of this kind is known from DE patent applica-
tion no. 38 22 745. In this tool the portion for engaging
the cap comprises two on the handle essentially perpendi-
cular arms tapering towards the ends, and in which the edges
intended to engage the cap form a small angle with each
15 other in such a way that each arm only contacts the rounded
outer rim of the cap in a single point.

 When the tool is used, the jaw is advanced towards
the cap, the free end of the jaw reaching under the edge of
the cap while the portion with the two arms abuts the rim of
20 the cap, the handle extending diametrically across the cap.
The handle is then pressed down against the cap to pivot
about a line through the two contact points between said
arms and the cap, whereby the jaw is intended to engage the
edge of the cap and deform it elastically and thus break the
25 vacuum in the jar.

 The tool suffers, however, from the major drawback
that the handle, in particular when used for breaking a va-
cuum in a jar with a comparatively big diameter, will abut
the upper rim of the cap in a point diametrically opposite
30 the jaw, before the jaw has lifted the edge of the cap
sufficiently, which result in the vacuum not being broken.
On account of the shape of the two arms the tool tends to
slide away from the cap during the pivoting movement, which
further amplifies the above-mentioned drawback.

35 The tool also suffers from the disadvantage in that
it is difficult to simultaneously hold the tool and to
present it to the cap, as the fingers cannot grasp the
handle as they would then be squeezed between the handle and

the cap, when the handle is pressed against the cap.

The object of the invention is to provide a tool of the type mentioned by way of introduction, which does not have the above-mentioned drawbacks and which is designed in
5 such a way that the user intuitively understands how to use it.

This object is met according to the invention by a tool, which is characteristic in that the portion for engaging the cap is adapted to bear on the upper surface of the
10 cap, that the mouth of the jaw is turned away from the other end of the handle, that the free end of the jaw forms a concave arc of a circle, and in that between the handle and the jaw is a guide means in the shape of a slot forming a concave, circular arc. In this embodiment the fingers may grasp
15 the handle of the tool, and the end of the tool with the jaw may in a natural way be advanced towards the rim of the cap, where it is guided to the rim by the concave, circular, cylindrical guide slot, the radius of which is of the same order as the radius of commonly used caps. The circular arc
20 formed by the free edge of the jaw likewise has a radius corresponding to the radius of the neck of the commonly used jars. This makes it possible for the jaw to reach all the way to the jar over its whole width, and it is thereby ensured that the jaw safely rests on the lower side of the rim
25 of the cap and not only contacts the rim in a single point. The handle is then lifted slightly thereby pivoting about the line of contact between the upper side of the cap and the portion bearing on the cap. By this movement the jaw grips the lower edge of the cap and gives it an elastic
30 deformation sufficient for breaking the vacuum in the jar. As the tool according to the invention bears on the upper side of the cap and not like the known tool the rounded outer rim of the cap, it does not, when used, like the known tool tend to slide away from the cap.

35 In a preferred embodiment the portion for engaging the cap may be a plane surface in the shape of a circle segment. By this embodiment a line contact is established during the pivoting of the tool between the edge of the

plane surface constituting the chord in the circle segment and the upper side of the rim of the cap which is usually a plane, annular surface. Such a line contact is more gentle to the cap than the point contact occurring in case of the known tool when used.

In another embodiment the circular segment may have such a size that when the tool is used it spans over two thread sections in the screw cap. The thread on the commonly used jars is a quadruple thread in case of small jars and a sextuple thread in case of big jars. As the pitch of the thread is comparatively big, and the portion of the neck of the jar provided with threads comparatively short, each thread or thread portion only extends over a comparatively small part of the circumference of the neck. The cap does not have an actual thread, but the rim of the cap facing downwards is flanged with a view to reinforcing the rim, except for four or six sections positioned equally spaced along the circumference, where the edge forms a flap facing the centre of the cap. When screwing on the cap these flaps engage the threads of the jar and therefore act as a kind of interior threads.

Tests have shown that it is advantageous that the circle segment spans over two thread sections in the cap in order to obtain a suitable elastic deformation of the rim of the cap for breaking the vacuum in the jar. If the circle segment spans over more thread sections, the pivoting line will, when the tool is used, be closer to the centre of the cap, and the lever between the pivoting line and the jaw will therefore become so long, that a user applies too large a force to break the vacuum and counteracts this by steadying the jar with the other hand, whereby the rim becomes permanently deformed. If, however, the circle segment spans over a smaller area, for instance only a single thread section, the force applied by the user to the rim of the cap will be concentrated on a small area, and there is a risk that a permanent deformation of the rim of the cap will occur.

In a further embodiment the length of the jaw may be

adjustable. Even though most jars on the market are provided with caps of standard size, caps having an extra high rim may also be found on the market. In said embodiment the tool may also be used for such jars in addition to being used for
5 the more common jars.

The invention will now be explained in detail by means of an embodiment and with reference to the drawing, in which

Fig. 1 is a lateral sectional view of a tool according to the invention,
10

Fig. 2 is a plane view of the tool seen from below,

Fig. 3 is an end view of the tool,

Fig. 4 is a sectional view showing the tool in engagement with the cap of a jar, and

15 Fig. 5 is a tool with an adjustable jaw.

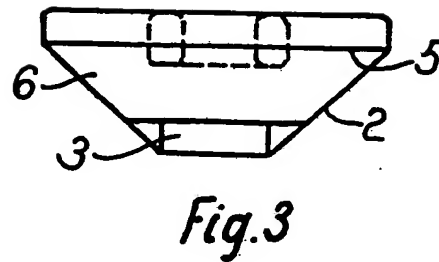
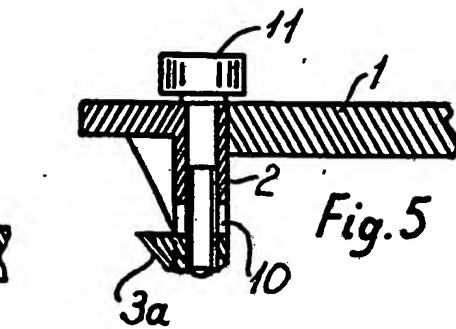
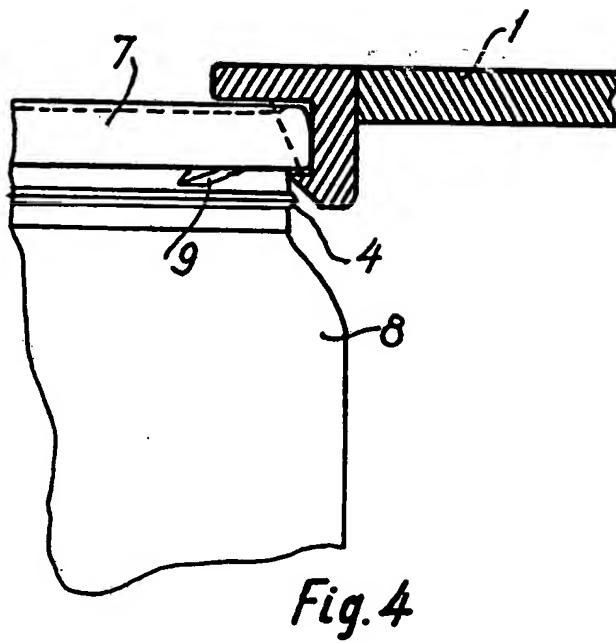
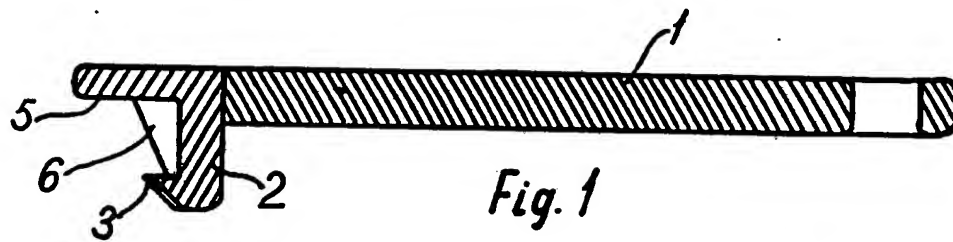
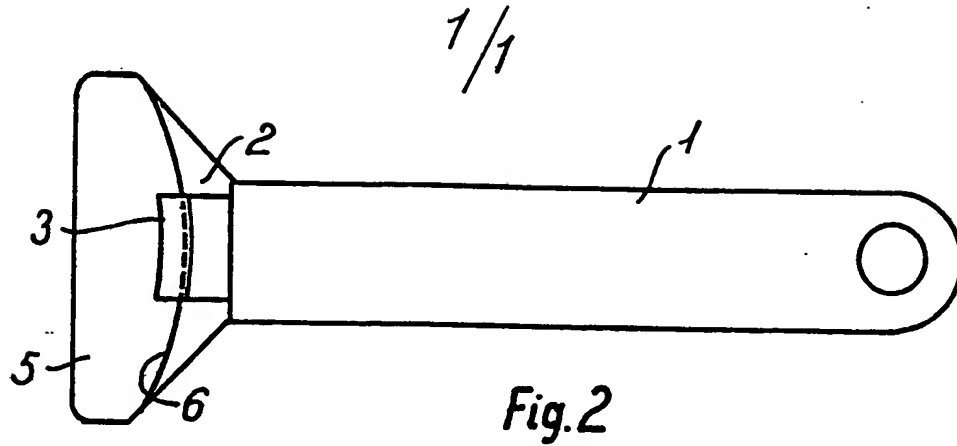
The tool shown in the drawing has an oblong handle 1 and a jaw 2, the free end 3 of which is formed to a concave circular arc. As best seen from Fig. 4 the under side of the jaw is bevelled, which makes it go free of the annular bead
20 4 normally present on preserving jars 8. Above the jaw the tool has a plane surface 5, which essentially has the shape of a circle segment, the circular boundary being formed by a circular guide slot 6 positioned in the jaw 2 between its free end 3 and the surface 5. The radius of the guide slot 6
25 and the jaw 2 corresponds to the radius of the biggest caps 7 and the radius of the neck of the corresponding jars 8, respectively, for which the tool is intended to be used,. The pressure surface 5 spans over the area between two thread sections in the cap 7.

30 As indicated by means of the hatchings in Figs. 1 and 4, the tool may, in a not further specified way, consist of a head with a jaw, pressure surface 5 and guide 6, and a separate handle 1.

In the embodiment shown in Fig. 5 the free end of the
35 jaw is a separate part 3a, which is displaceable in a slot 10 in the jaw 2. The part 3a is secured in the slot 10 by a threaded bolt 11, and the length of the jaw may be adjusted by turning the bolt 11.

C L A I M S

1. A tool for breaking a vacuum in a preserving jar (8) closed with a screw cap (7), said tool comprising an oblong handle (1), which at one end has a portion (5) for engaging the periphery of the cap (7), and a jaw (2) for engaging the lower edge of the cap (7), characterized in that the portion (5) for engaging the cap is adapted to bear on the upper surface of the cap, that the mouth of the jaw (2) is turned away from the other end of the handle (1), that the free end (3) of the jaw (2) forms a concave arc of a circle, and in that between the handle (1) and the jaw (2) is a guide means (6) in the shape of a slot forming a concave, circular arc.
2. A tool according to claim 1, characterized in that the portion for engaging the cap (7) is a plane surface (5) in the shape of a circle segment.
3. A tool according to claim 2, characterized in that the circle segment has such a size that when the tool is used it covers two thread sections in the screw cap (7).
4. A tool according to any of the preceding claims, characterized in that the length of the jaw (2) is adjustable.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 93/00089

A. CLASSIFICATION OF SUBJECT MATTER

IPC5: B67B 7/18, B67B 7/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC5: B67B, B25B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DIALOG; WPI, QUESTEL; EDOC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO, A1, 8803908 (WARBURG, RICHARD, J.), 2 June 1988 (02.06.88), page 4, line 22 - line 27, figures 1,2,4	1-3
Y	DE, C, 818740 (PAUL REESE), 29 October 1951 (29.10.51), page 2, line 62 - line 67, figures 1,2	1-3
Y	FR, A, 1156967 (M. PIERRE RAVIGNEAUX), 23 May 1958 (23.05.58), figures 2,3, details B, K & L	1-3
Y	DE, C1, 3410333 (MERTGEN, WOLFGANG), 20 June 1985 (20.06.85), column 5, line 37 - line 52, figure 4, claim 1	1-3

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 1934594 (HENRY J. EDLUND), 7 November 1933 (07.11.33), page 2, line 8 - line 10, figure 1 —	1-4
A	CA, A, 1183700 (BOYLE, JIM), 12 March 1985 (12.03.85), page 3, line 23 - line 28, figure 1 — —————	4

INTERNATIONAL SEARCH REPORT
Information on patent family members

28/05/93

International application No.
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WO-A1- 8803908	02/06/88	AU-B- 606650 AU-A- 1106288 CA-A- 1271927 DE-A- 3782616 EP-A,B- 0268348	14/02/91 16/06/88 24/07/90 17/12/92 25/05/88
DE-C- 818740	29/10/51	NONE	
FR-A- 1156967	23/05/58	NONE	
DE-C1- 3410333	20/06/85	EP-A- 0158162	16/10/85
US-A- 1934594	07/11/33	NONE	
CA-A- 1183700	12/03/85	NONE	